



*Handwritten signature/initials*

Attorney's Docket No. 6513-DIV

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Patent application

In re application of: David C. Dunand

Group Art Unit: 1742

Serial No.: 10/680,639

Filed: October 7, 2003

For: SUPERCONDUCTING Mg-MgB<sub>2</sub> AND RELATED METAL COMPOSITES  
AND METHODS OF PREPARATION

**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, VA 22313-1450**

**TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT  
WITHIN THREE MONTHS OF FILING OR BEFORE MAILING OF  
FIRST OFFICE ACTION (37 CFR 1.97(b))**

**NOTE:** "An information disclosure statement shall be considered by the Office if filed: (1) within three months of the filing date of a national application; (2) within three months of the date of entry of the national stage as set forth in § 1.491 in an international application; or (3) before the mailing date of a first Office action on the merits, whichever event occurs last." 37 CFR 1.97(b).

**NOTE:** The "filing date of a national application" under 37 CFR 1.97(b) has two possible meanings. Where the filing is a direct one to the United States Patent & Trademark Office, the filing is defined in 37 CFR 1.53(b) as "the date on which: (1) A specification containing a description pursuant to § 1.71 and at least one claim pursuant to § 1.75; and (2) any drawing required by § 1.81(a), are filed in the Patent and Trademark Office in the name of the actual inventor or inventors as required by § 1.41." 37 CFR 1.97(b)(1). On the other hand, an international application that enters the national stage occurs when the applicant has filed the documents and fees required by 35 U.S.C. § 371(c) within the periods set forth in § 1.494 or § 1.495. 35 U.S.C. § 371(c) requires the filing of the following: (1) the national fee; (2) a copy of the international application, unless already sent by the International Bureau, and an English translation if filed in another language; (3) amendments under PCT Article 19, with a translation into English if made in another language; (4) an oath or declaration; and (5) a translation into English of any annexes to the International preliminary examination report, if such annexes were made in another language. 37 CFR 1.97(b)(2).

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Date: May 12, 2004

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Antonia M. Holland

Signature

Antonia M. Holland

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## IDENTIFICATION OF TIME OF FILING THE ACCOMPANYING INFORMATION DISCLOSURE STATEMENT

The information disclosure statement submitted herewith is being filed within three months of the filing date of the application or date of entry into the national stage of an international application or before the mailing date of a first Office action on the merits, whichever event occurs last. 37 CFR 1.97(b).

**NOTE:** *"No certification or fee is due when the filing is made within the above time period. It is advisable to ensure that no Office action has been mailed if the disclosure statement is delayed until after three months from filing."*

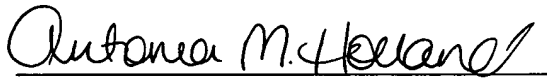
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**NOTE:** *"The term 'national application' includes continuing applications (continuations, divisions, continuations-in-part) so three months will be measured from the actual filing date of an application as opposed [sic] to the effective date of a continuing application." Notice of April 20, 1992 (1138 O.G. 37-41, 39).*

**NOTE:** *"An action on the merits means an action which treats the patentability of the claims in an application, as opposed to only formal or procedural requirements. An action on the merits would, for example, contain a rejection or indication of allowability of a claim or claims rather than just a restriction requirement (37 CFR 1.142) or just a requirement for additional fees to have a claim considered (37 CFR 1.16(d)). Thus, if an application was filed on Jan. 1 and the first Office action on the merits was not mailed until six months later on July 1, the examiner would be required to consider any proper information disclosure statement filed prior to July 1." Notice of April 20, 1992 (1138 O.G. 37-41, 39).*

**WARNING:** *"A petition for suspension of action to allow applicant time to submit an information disclosure statement will be denied as failing to present good and sufficient reasons, since 37 CFR 1.97 provides adequate recourse for the timely submission of prior art for consideration by the examiner." Notice of July 6, 1992 (1141 O.G. 63).*

Dated: May 12, 2004  
Reg. No. 53,840  
Tel. No.: (414) 298-8285

  
\_\_\_\_\_  
SIGNATURE OF ATTORNEY  
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Reinhart Boerner Van Deuren, s.c.  
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Attn: Linda Gabriel, Docket Clerk  
Milwaukee, WI 53202  
\_\_\_\_\_

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**TRANSMITTAL  
FORM**

(to be used for all correspondence after initial filing)

<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	10/680,639	
	Filing Date	October 7, 2003	
	First Named Inventor	David C. Dunand	
	Art Unit	1742	
	Examiner Name	Ngoclan Thi Mai	
Total Number of Pages in This Submission		Attorney Docket Number	6513-DIV

**ENCLOSURES (check all that apply)**☐ Fee Transmittal Form☐ Fee Attached☐ Amendment / Reply☐ After Final☐ Affidavits/declaration(s)☐ Extension of Time Request☐ Express Abandonment Request☒ Information Disclosure Statement☐ Certified Copy of Priority Document(s)☐ Response to Missing Parts/Incomplete Application☐ Response to Missing Parts under 37 CFR 1.52 or 1.53☐ Drawing(s)☐ Licensing-related Papers☐ Petition☐ Petition to Convert to a Provisional Application☐ Power of Attorney, Revocation Change of Correspondence Address☐ Terminal Disclaimer☐ Request for Refund☐ CD, Number of CD(s)☐ After Allowance Communication to Group☐ Appeal Communication to Board of Appeals and Interferences☐ Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)☐ Proprietary Information☐ Status Letter☒ Other Enclosure(s)  
(please identify below):

- Statement by Applicant
- Return Receipt Postcard
- Transmittal of IDS before 1st Office Action

Remarks

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm or Individual name	Antonia M. Holland
Signature	<i>Antonia M. Holland</i>
Date	May 14, 2004

**CERTIFICATE OF TRANSMISSION/MAILING**

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Typed or printed name	Antonia M. Holland		
Signature	<i>Antonia M. Holland</i>	Date	May 12, 2004

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

MW1090000AMH:NAM 05/10/04

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# PATENT

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Reinhart Boerner Van Deuren s.c.

Dated: May 12, 2004

By:

*Antonia M. Holland*  
Antonia M. Holland

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: David C. Dunand )  
Serial No.: 10/680,639 )  
Filed: October 7, 2003 ) Docket No. 6513-DIV  
For: SUPERCONDUCTING Mg-MgB<sub>2</sub> AND )  
RELATED METAL COMPOSITES AND )  
METHODS OF PREPARATION )

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

### INFORMATION DISCLOSURE STATEMENT

Sir:

On behalf of Applicant and pursuant to 37 C.F.R. § 1.97-.98, patents and publications that may be relevant are hereby presented for consideration. Pursuant to MPEP § 609I(2), copies of such patents and publications are not provided, as such copies were provided in the parent application no. 10/160,805 filed May 31, 2002.

Respectfully submitted,

BY *Antonia M. Holland*  
Antonia M. Holland

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PTO/SB/08a (08-03)

Substitute for form 1449B/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 2 of 4

**Complete if Known**

Application Number	10/680,639
Filing Date	October 7, 2003
First Named Inventor	David C. Dunand
Art Unit	1742
Examiner Name	Ngoclan Thi Mai
Attorney Docket Number	6513-DIV

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		ZHU, Y. et al., "Microstructure and Structural Defects in MgB <sub>2</sub> Superconductor," <i>Physica C: Superconductivity and Its Applications</i> , August 2001, 356(4), p. 239-53 (Abstract only).	
		GIUNCHI, GIOVANNI, "High Density MgB <sub>2</sub> Obtained by Reactive Liquid Mg Infiltration," Los Alamos National Laboratory, Preprint Archive, Condensed Matter, 1-8, arXiv:cond-mat/0208040, 2002.	
		RAFAILOV, P. M., et al., "The Raman Spectra of MgB <sub>2</sub> and Its Potential Impurity Phases," <i>Physica Status Solidi B: Basic Research</i> , June 11, 2001, 226(2), R9-R11.	
		WILSON, ET AL. "Reaction of magnesium boride particles in mechanically alloyed Ti-4wt%MgB <sub>2</sub> ", <i>Journal of Materials Science</i> , 2001, p. 67-75, Vol. 36, Kluwer Academic Publishers.	
		SHARONI, ET AL. "Spatial variations of the superconductor gap structure in MgB <sub>2</sub> /Al composite", <i>Institute of Physics Publishing</i> , April 26, 2001, p. L503-L508, Matter 13, IOP Publishing Ltd.	
		SOLTANIAN, ET AL. "High-transport critical current density above 30 K in pure Fe-clad MgB <sub>2</sub> tape", <i>Physica C</i> , 2001, p. 84-90, Elsevier Science B.V.	
		WANG, ET AL. "Very fast formation of superconducting MgB <sub>2</sub> /Fe wires with high J <sub>c</sub> ", <i>Physica C</i> , 2001, p. 149-155, Elsevier Science B.V.	
		KITAGUCHI, ET AL. "Strain effect in MgB <sub>2</sub> /stainless steel superconducting tape", <i>Physica C</i> , 2001, p. 198-201, Elsevier Science B.V.	
		SONG, ET AL. "Single-filament composite MgB <sub>2</sub> /stainless-steel ribbons by powder-in-tube process", <i>Physica C</i> , 2002, p. 21-26, Elsevier Science B.V.	
		GOLDACKER, ET AL. "Influence of mechanical reinforcement of MgB <sub>2</sub> wires on the superconducting properties", <i>Physica C</i> , 2002, p. 889-893, Elsevier Science B.V.	
		TACHIKAWA, ET AL. "Effects of metal powder addition on the critical current in MgB <sub>2</sub> tapes", <i>Physica C</i> , 2002, p. 108-112, Elsevier Science B.V.	

Examiner  
SignatureDate  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 120 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet 3 of 4

**Complete if Known**

Application Number	10/680,639
Filing Date	October 7, 2003
First Named Inventor	David C. Dunand
Art Unit	1742
Examiner Name	Ngoclan Thi Mai
Attorney Docket Number	6513-DIV

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		JIN, ET AL. "High critical currents in iron-clad superconducting MgB <sub>2</sub> wires", <i>Nature</i> , May 31, 2001, p. 563-565, Macmillan Magazines Ltd.	
		CANFIELD, ET AL. "Superconductivity in Dense MgB <sub>2</sub> Wires", <i>Physical Review Letters</i> , March 12, 2001, p. 2423-2426, Vol. 86, Number 11, The American Physical Society 2001.	
		MARTINEZ, ET AL. "Study of Ag and Cu/ MgB <sub>2</sub> powder-in-tube composite wires fabricated by <i>in situ</i> reaction at low temperatures", <i>Superconductor Science and Technology</i> , 2002, p. 1043-1047, IOP Publishing Ltd.	
		PACHLA, ET AL. "Structural inhomogeneity of superconducting <i>ex situ</i> MgB <sub>2</sub> /Cu wires made by the powder-in-tube technique", <i>Superconductor Science and Technology</i> , 2002, p. 1281-1287, IOP Publishing Ltd.	
		KOVAC, ET AL. "Structure, grain connectivity and pinning of as-deformed commercial MgB <sub>2</sub> powder in Cu and Fe/Cu sheaths", <i>Superconductor Science and Technology</i> , 2002, p. 1127-1132, IOP Publishing Ltd.	
		EISTERER, ET AL. "Enhanced transport currents in Cu-sheathed MgB <sub>2</sub> wires", <i>Superconductor Science and Technology</i> , 2002, p. 1088-1091, IOP Publishing Ltd.	
		SUO, ET AL. "Fabrication and transport critical currents of multifilamentary MgB <sub>2</sub> /Fe wires and tapes ", <i>Superconductor Science and Technology</i> , 2002, p. 1058-1062, IOP Publishing Ltd.	
		SONG, ET AL. "Anisotropic grain morphology, crystallographic texture and their implications for flux pinning mechanisms in MgB <sub>2</sub> pellets, filaments and thin films", <i>Superconductor Science and Technology</i> , 2002, p. 511-518, IOP Publishing Ltd.	
		WU, ET AL. "Superconducting MgB <sub>2</sub> Nanowires", <i>Advanced Materials</i> , October 2, 2001, Vol. 13, No. 19, p. 1487-1489, WILEY-VCH Verlag GmbH.	
		CUNNINGHAM, ET AL. "Synthesis and processing of MgB <sub>2</sub> powders and wires", <i>Physica C</i> , 2001, p. 5-10, Elsevier Science B.V.	
		LOUIS, ET AL. "Pressure infiltration of packed ceramic particulates by liquid metals", <i>Acta Materialia</i> , December 10, 1999, p. 4461-4479.	

Examiner Signature		Date Considered	
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Sheet 4 of 4

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		UNKNOWN. "Transactions of the Indian", <i>Institute of Metals</i> , December 1997, p. 665-674.	
		GLOWACKI, ET AL. "Superconductivity of powder-in-tube MgB <sub>2</sub> wires", <i>Superconductor Science &amp; Technology</i> , April 2001, p. 193-199.	
		ZHANG, ET AL. "Structure and superconductivity of Mg(B1-xCx)(2) compounds", <i>Chinese Physics</i> , April 2001, p. 335-337.	
		GOLDACKER, ET AL. "High transport currents in mechanically reinforced MgB <sub>2</sub> wires", <i>Superconductor Science and Technology</i> , 2001, p. 787-793, IOP Publishing Ltd.	
		FUJII, ET AL. "Influence of MgB <sub>2</sub> powder quality on the transport properties of Cu-sheathed MgB <sub>2</sub> tapes", <i>Physica C</i> , 2001, p. 237-242, Elsevier Science B.V.	
		ZHOU, ET AL. "Single- and multi-filamentary Fe-sheathed MgB <sub>2</sub> wires", <i>Physica C</i> , 2002, p. 349-354, Elsevier Science B.V.	
		KUMAKURA, ET AL. "Microstructure and superconducting properties of powder-in-tube processed MgB <sub>2</sub> tapes", <i>Physica C</i> , 2002, p. 93-97, Elsevier Science B.V.	
		MICHAUD, Liquid-State Processing, Thesis, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, 1991, Pages 3-22.	
		MORTENSEN, ET AL., Solidification processing of metal matrix, International Materials Reviews, Volume 37, No. 3, 1992, Pages 101-128.	

Examiner  
SignatureDate  
Considered

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